



## RESIDENTIAL WATER HEATER INSTALLATION REQUIREMENTS

333 North Rancho Drive, Las Vegas NV 89106-3703

Phone: (702) 229-6251 Fax: (702) 382-1240

**A PLUMBING PERMIT IS REQUIRED TO INSTALL, MOVE, REMOVE OR REPLACE ANY WATER HEATER.** A permit may be obtained from the City of Las Vegas Building Department located at the DSC, 333 N Rancho Dr., Las Vegas, NV 89106 or online at our website:

[http://www.lasvegasnevada.gov/portal/faces/wcnav\\_externalId/db-building-permits](http://www.lasvegasnevada.gov/portal/faces/wcnav_externalId/db-building-permits).

- A HOMEOWNER MAY OBTAIN A PERMIT FOR THE WATER HEATER IF THE HOME IS THEIR PRIMARY RESIDENCE UNDER THEIR OWNERSHIP. A CONTRACTOR IS REQUIRED FOR RENTAL PROPERTIES OR SECONDARY HOMES.

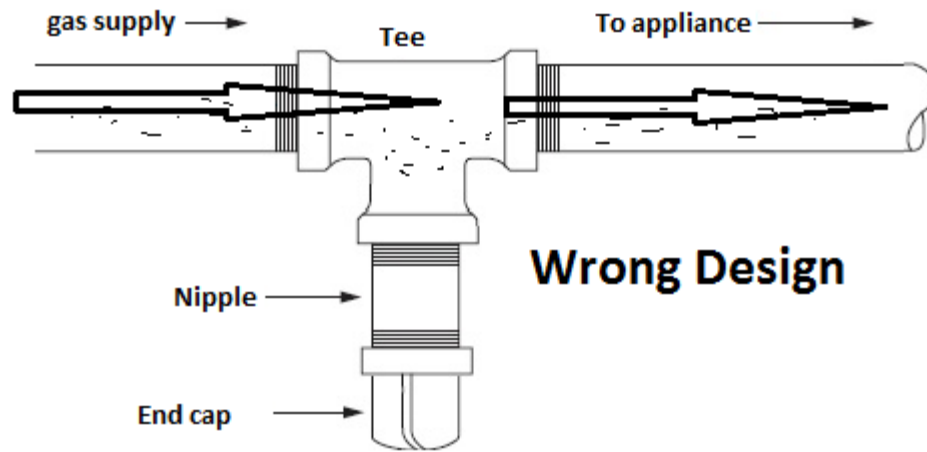
*A FINAL INSPECTION (inspection Code 440) IS REQUIRED AFTER ALL WORK HAS BEEN COMPLETED. THE INSPECTION SHALL BE REQUESTED AT LEAST ONE DAY PRIOR TO THE DAY OF THE INSPECTION. INSPECTIONS ARE AVAILABLE 7 DAYS A WEEK FOR CUSTOMER CONVENIENCE. THE NUMBER TO CALL FOR THE INSPECTION IS LOCATED AT THE TOP OF THE INSPECTION PERMIT CARD, 702 229-4677 FOR THE AUTOMATED INSPECTION REQUEST LINE, OR 702 229-6914 IF YOU REQUIRE ASSISTANCE. Inspections can also be scheduled on our website at <https://permits.lasvegasnevada.gov/Account/LogOn>. Please call the 702 229-6914 to schedule a weekend inspection.*

THE FOLLOWING ARE WATER HEATER INSTALLATION REQUIREMENTS FROM THE 2012 UNIFORM PLUMBING CODE, 2009 INTERNATIONAL ENERGY CONSERVATION CODE AND THE 2011 NATIONAL ELECTRICAL CODE.

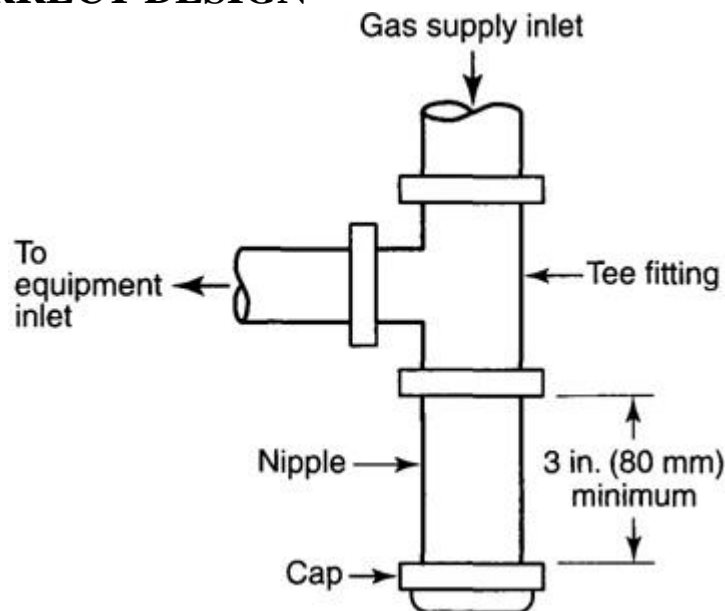
- **CONTROL VALVES AND WATER HEATER CONNECTORS** [UPC 604.13, 606.5] a control valve shall be installed immediately ahead of each water supplied appliance. Water heater connectors shall comply with UPC 604.13 and table 1401.1
- **EXPANSION TANK** [UPC 608.3] Any water system provided with a check valve, backflow preventer, or any other normally closed device that prevents dissipation of building pressure back into the water main shall be provided with an approved, listed, and adequately sized expansion tank or other approved device having a similar function to control thermal expansion. Such expansion tank or other approved device shall be installed on the building side of the check valve, backflow preventer, or other device and shall be sized and installed in accordance with the manufacture's recommendation.
- **SEISMIC BRACING** [UPC SECTION 507.2] Water heaters require two seismic straps; one located within the top 1/3 of the water heater unit and one at the bottom 1/3. The bottom strap must be located at least 4" away from the water heater controls. The straps are to be attached to a building framing member (stud or wood backing located behind the drywall). The water heater is required to be secured in place to prevent any lateral movement. Any platform supporting the water heater must also be secured to the structures or the slab. See picture below.
- **VENTING** [UPC SECTION 509.6] All single wall and single wall to double wall joints shall be secured with a minimum of three sheet metal screws, rivets or similar positive connections. Duct type tape is not acceptable. The exhaust vent must maintain clearance from combustible materials such as wood framing,

drywall or roofing material. Generally the minimum clearance distance is 6" for single wall pipe and 1" for double wall pipe. Vents may require additional supports depending on the material and design. The vent shall terminate in a listed and approved vent cap above the roof.

- **PRESSURE and TEMPERATURE VALVE** [UPC SECTION 505.6, 507.5 608.5] All water heaters have a temperature and pressure relief (T&P) valve. The pipe from the valve shall be sloped to drain to the exterior of the building. The end of the pipe shall be between 6" and 24" aboveground or the flood level of the area receiving the discharge pointing downward. The diameter of the valve opening shall not be reduced (internal dimension) and must be maintained to the termination of the drain (generally ¾"). Check the manufacturer's requirements for sizing. When approved by the Chief Building Official, such drain may terminate at other locations (i.e., laundry tub, floor sink, or floor drain). No part of such drain shall be trapped and the terminal end of the drain shall not be threaded. Discharge from a T&P relief valve into a water heater pan shall be prohibited.
- **LOCATED IN BEDROOMS AND BATHROOMS** [UPC SECTION 504] Water heater installations in bedrooms and bathrooms shall comply with the provisions of UPC Section 504.1.
- **LOCATED IN A GARAGE** [UPC SECTION 507.13] Water heaters located in a garage must be elevated so the pilot light and controls for gas water heaters and the electrical element of electric water heaters are at least 18" above the garage floor surface. Appliances shall be located or protected so it is not subject to physical damage by a moving vehicle.
- **LOCATED IN AN ATTIC, UNDER-FLOOR SPACES OR ABOVE THE FIRST FLOOR LEVEL** [UPC SECTION 507.4, 509.4] Water heaters located in an attic or under-floor space shall be set in a pan constructed of water tight corrosion resistant material. The pan must be fitted with a minimum ¾" drain that drains to an approved location. Discharge from a T&P relief valve into a water heater pan shall be prohibited.
- **COMBUSTION AIR MUST BE MAINTAINED** [UPC SECTION 506] Combustion air must be maintained per the Uniform Plumbing Code. Louvered doors are not permitted as a source for combustion air.
- **INSULATION** [IECC SECTION 403.3, 403.4] Hot water piping shall be insulated to at least R-3. Circulating hot water piping to at least R2. The insulation shall be installed so that it is at least 6" clear from single wall metal flue pipe or 1" clear from a double wall B-vent pipe.
- **BONDING** [NEC SECTION 250] Metallic water and gas pipes within a residence are connected together with electrical bonding wires and then grounded to prevent shock hazards should an energized electrical wire come in contact with the pipe. The bonding will typically take place at the water pipe of the water heater. For replacement of an existing water heater the current bonding must be maintained.
- **ELECTRIC WATER HEATER DISCONNECT** [UPC 508.2.2] A readily accessible electrical disconnecting means within sight of the appliance that will completely de-energize the appliance is required.
- **WATER HEATER GAS SHUTOFF VALVE** [UPC 1211.5] Shutoff valves are required and must be accessible. Gas shutoff valves shall be installed within 6 feet of the appliance it serves and ahead of the gas connector. The gas connector between the gas shutoff valve and the sediment trap shall be of the flexible type. See picture below – yellow flexible line with attached tag
- **SEDIMENT TRAP** [UPC 1211.8] Where a sediment trap is not incorporated as a part of the gas utilization appliance, a sediment trap shall be installed downstream of the appliance shutoff valve as close to the inlet of the appliance as practical at the time of appliance installation.



## CORRECT DESIGN



Please reference the picture below: Note the strap locations and installation into a framing member, the sediment trap, gas connector and gas valve location, the pipe bollard for moving vehicle protection and the elevated platform.



Question: What's missing?

Answer: T&P drain line and possibly a expansion tank – see above requirement

Question: But what about a pan?

Answer: Excellent idea but not required by code on ground level.